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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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07/02/2003

Wayne D. Grover

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05/13/2008

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EXAMINER

CHU, WUTCHUNG

ART UNIT

PAPER NUMBER

2619

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/613,531	Applicant(s) GROVER ET AL.	
	Examiner WUTCHUNG CHU	Art Unit 2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-13 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This communication is in response to application's amendment filed on 2/22/2008. Claims 1-13 are pending.

Priority

2. Applicant's claim for domestic priority under 35 U.S. C. 119(e) is acknowledged.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4, 6-10, and 12-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Grover (US6421349).

Regarding claim 1, Grover discloses a distributed preconfiguration of spare capacity in closed paths for network restoration (**see col. 2 lines 61-67**) comprising:

- pre-selecting a set of candidate cycles for forming into pre-configured cycles (**see col. 6 lines 54-59 a preconfigured crossconnection is a crossconnection at a node which is preset between spare links in statistical anticipation of a span failure. A PC plan is the network wide state of all preconfigured corssconnections and the spare links which then interconnect and col. 3**

lines 14-39; candidate cycles is not further specified therefore it is broadly interpreted);

- allocating working paths and spare capacity in the mesh telecommunications network based on the set of candidate cycles **(see col. 6 line 53 – col. 7 line 26 the restorability when using a KSP algorithm to calculate a restoration pathset for each of the networks failed spans with the given numbers of spare links and col. 4 lines 25-44);** and
- providing the mesh telecommunications network with spare capacity arranged in pre-configured cycles according to the allocation determined in the preceding step **(see col. 7 lines 6-25 and col. 7 lines 50-65).**

Regarding claim 2, Grover teaches the allocation of working paths and spare capacity is jointly optimized **(see col. 7 lines 18-26).**

Regarding claim 3, Grover teaches pre-selecting candidate cycles includes ranking a set of closed paths in the mesh telecommunications network according to the degree to which each closed path protects spans on and off the closed path, and selecting candidate cycles from the set of closed paths **(see col. 13 lines 22-42).**

Regarding claim 4, Grover teaches ranking of closed paths takes into account the cost of the closed path **(see col. 9 lines 35).**

Regarding claim 6, Grover teaches allocation of spare capacity is carried out using an integer linear programming (ILP) formulation, where an objective function minimizes the total cost of spare capacity (**see col. 8 lines 9-14**).

Regarding claim 7, Grover teaches the objective function is subject to the constraints:

- A. All lightpath requirements are routed (**see col. 8 lines 27 – col. 9 line 40**);
- B. Enough channels are provided to accommodate the routing of lightpaths in A (**see col. 9 lines 13**).
- C. The selected set of pre-configured cycles give 100% span protection (**see col. 9 lines 14**).
- D. Enough spare channels are provided to create the pre-configured cycles needed in C (**see col. 9 lines 10-16**).
- E. The pre-configured cycles decision variables and capacity are integers (**see col. 9 lines 47-52**).

Regarding claim 8, Grover teaches allocation of spare capacity is carried out using an integer linear programming (ILP) formulation (**see col. 8 lines 9-14**), where the objective function minimizes (**see col. 8 lines 23**) the total cost (**see col. 9 lines 35**) of spare capacity and working capacity (**see col. 8 lines 13 – col. 9 line 40**).

Regarding claim 9, Grover teaches disclose all the limitations as discussed in the rejection of claim 7 and is therefore claims 9 is rejected using the same rationales.

Regarding claim 10, Grover teaches a mixed selection strategy is used for pre-selecting candidate cycles (**see col. 8 lines 9 – col. 9 line 60**).

Regarding claim 12, Grover teaches the mixed selection strategy includes selecting candidate cycles based on absolute number of straddling spans protected by the candidate cycles (**see col. 4 lines 1-11**).

Regarding claim 13, Grover teaches telecommunications network designed (**see col. 2 line 62**).

Claim Rejections - 35 USC § 103

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grover in view of Su et al. (US2002/0163682).

Regarding claim 11, Grover disclose all the subject matter of the claimed invention with the exception of the mixed selection strategy includes selecting candidate cycles randomly.

Su et al. from the same or similar fields of endeavor teaches the use of randomly select path (**see Su et al. paragraph 39**). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the randomly select path as taught by Su et al. in distributed preconfiguration of spare capacity in closed paths for network restoration of Grover in order to provide ability to create a resource-efficient backup path (**see Su et al. paragraph9**).

Response to Arguments

8. Applicant's arguments, see applicant's remark page 1, filed 2/22/2008, with respect to claim objection on claim 13 have been fully considered and are persuasive. The claim objection of claim 13 has been withdrawn.

9. Applicant's arguments filed 2/22/2008 have been fully considered but they are not persuasive.

With regard to applicant's remark for claim 1 (page 10), applicant submits that Grover does not teach neither pre-selection of candidate cycles, nor allocation of working capacity and spare capacity to those cycles.

Grover in col. 3 lines 13-39 Grover disclose the process of searching for and identifying a set of intermediate nodes which corresponds to pre-selection of candidate

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cycles; and in column 4 lines 24-48 discloses establishing a connected telecommunications route through a telecommunication network, in which the telecommunications network includes plural distinct nodes interconnected by plural distinct spans, and in col. 5 lines 1-10 Grover discloses restoration spare capacity which corresponds to allocation of working capacity and spare capacity to those cycles.

Therefore teaches the limitations and rejection respectfully remains.

Examiner's Note: examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the figures may apply as specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Allowable Subject Matter

10. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Thang et al. (US2002/0167898)

Andersson et al. (US2002/0004843)

Yoshida (US651039)

Grover et al. (US6819662)

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WUTCHUNG CHU whose telephone number is (571)270-1411. The examiner can normally be reached on Monday - Friday 1000 - 1500EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edan Orgad can be reached on 571 272 7884. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/WC/
Wutchung Chu

/Edan Orgad/
Supervisory Patent Examiner, Art Unit 2619